

Remarks/Arguments

Claims 1-33 are pending in this application. Claim 34 was previously cancelled. Claims 8, 10-14, 18, 21-23, and 25-33 are withdrawn from consideration. Claims 1-7, 9, 15-17, 20, 24 and 34 are rejected. Claims 1 and 2 are currently amended. Reconsideration and further examination are requested.

Claim Objections

Claim 2 was subject to objection under 37 CFR 1.75(c) as failing to further limit the previous claim. In particular, the Office asserts that claim 1 requires a pre-existing mixture of reagent and formation fluid by reciting "moving a mixture of formation fluid and analytical reagent through a spectral analyzer cell in the fluids analyzer." Applicant is unable to follow the Office's logic, and therefore traverses. The step of *moving* a mixture through a spectral analyzer in claim 1 does not imply that the *mixing* step has occurred at any particular place up to and including the spectral analyzer. For example, and without limitation, mixing could occur in the fluids analyzer prior to the moving step. Alternatively, the formation fluid and reagent could be mixed prior to insertion into the fluids analyzer. Claim 2 recites that mixing takes place in the flow line. Since claim 1 does not limit mixing to the flow line, claim 2 does further limit the previous claim and the objection should be withdrawn.

§112 first paragraph rejections

Claims 1-2 are rejected under 35 U.S.C. 112 first paragraph. In particular, the Office asserts that the specification does not enable practice of the invention commensurate with the scope of the claims because claim 1 does not recite mixing the formation fluid with the reagent in the flow line. Applicant respectfully traverses. As long as the specification discloses at least one method for making and using the claimed invention that bears a reasonable correlation to the entire scope of the claim, then the enablement requirement of 35 U.S.C. 112 is satisfied. *In re Fisher*, 427 F.2d 833, 839, 166 USPQ 18, 24 (CCPA 1970). Failure to disclose other methods by which the claimed invention may be made does not render a claim invalid under 35 U.S.C. 112. *Spectra-Physics, Inc. v. Coherent, Inc.*, 827 F.2d 1524, 1533, 3 USPQ2d 1737, 1743 (Fed. Cir.), *cert. denied*, 484 U.S. 954 (1987). One of the main advantages of the recited invention is that fluid analysis is done before changes in environmental conditions alter results. As described in paragraph [0005], fluid samples can

undergo irreversible phase transitions between the point of collection and the point of analysis because of changes in environmental conditions such as pressure and temperature. In order to provide improved analysis, mixing of the formation fluid with reagent and analysis of the mixture are done within the borehole. Whether the mixing takes place in the flow line, the fluids analyzer, or some other structure is not critical to the invention; the point is that mixing and analysis is done within the borehole. The detailed description describes the flow line as one possible place for mixing, but the flow line could be replaced with some equivalent structure known to those skilled in the art that performs the same function because there is nothing special about a flow line that permits mixing which cannot be done in other structures. The requirement of reciting mixing in a flow line in claim 1 is therefore both unnecessary and unreasonable. Withdrawal of the rejection is therefore requested.

Claims 2-7, 9, 15-17, 20 and 34 are rejected under §112 first paragraph because the step of injecting reagent into the formation fluid appears to be performed after the mixture is moved through the spectral analyzer cell. Claims 1 and 2 are currently amended to clarify this confusion, and also to clarify the expression "reagent injection spectral analysis." However, Applicant is unable to find any portion of the rejection which is pertinent to claims 3-7, 9, 15-17, 20 and 34. Indeed, claim 34 was previously cancelled. Withdrawal of the rejections is therefore requested.

Claim 3 was rejected under 35 U.S.C. 112 first paragraph for lacking enablement based on another allegedly missing step. In particular, the Examiner states that "there is no way for a person of ordinary skill in the art to inject the reagent using the syringe pump when the reagent is stored in the container." Inexplicably, the Examiner then provides two examples which contradict the previous statement, i.e., transferring reagent to a syringe body, and the reagent container being the syringe body. The Examiner is urged to review the MPEP and discuss interpretation of 112 first paragraph with her SPE. Nearly every patent application recites claims that omit some of the structure and steps described in the specification. Applicants naturally seek the broadest protection permissible for their inventions, and recitation in the claims of every trivial detail in the detailed description would, in most cases, result in claims so narrow that avoidance of infringement would become a simple exercise. With regard to claim 3, use of a syringe pump and a container is certainly within the capabilities of one skilled in the art without further limitations. The Examiner has already suggested two distinct techniques for doing so. The requirement is therefore both unnecessary and unreasonable, and withdrawal of the rejection is requested.

Claims 5-7 are rejected under 35 U.S.C. 112 first paragraph for lacking enablement based on failure to recite an automated controller. The reasoning is identical to that of the other 112 first paragraph rejections described above, and the rejection is both unnecessary and unreasonable for the reasons already described above. Further, Applicant submits that a non-automated controller could be adapted for the purpose. Withdrawal of the rejection is therefore requested.

§112 second paragraph rejections

Claims 1-7, 9, 15-17, 20, 24 and 34 are rejected under 35 U.S.C. 112 second paragraph. Claim 1 has been amended to clarify that the elements are part of the formation tester. However, Applicant respectfully traverses the extensive list of rejections based on alleged missing relationships between elements in the other claims. "[I]t is not essential to a patentable combination that there be interdependency between the elements of the claimed device or that all the elements operate concurrently toward the desired result." *Ex parte Nolden*, 149 USPQ 378, 380 (Bd. Pat. App. 1965). A claim does not necessarily fail to comply with 35 U.S.C. 112, second paragraph where the various elements do not function simultaneously, are not directly functionally related, do not directly intercooperate, and/or serve independent purposes. *Ex parte Huber*, 148 USPQ 447, 448-49 (Bd. Pat. App. 1965). With respect, in attempting to require that the claims recite various intermediate steps to create interdependency between the currently recited steps, the Examiner has misconstrued the requirements of 35 U.S.C. 112 second paragraph. Withdrawal of the rejections is requested.

Obviousness Rejections

Claims 1, 2, 4, 24 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. 5,246,862 ("Grey") in view of U.S. 6,564,866 ("Clark"). The Examiner cites Grey as teaching a reagent used in a formation. However, as described at column 2, line 66 through column 4, line 2, Grey's reagent is immobilized on the surface of a tape. Unlike the present invention, in the Grey system contaminants must permeate a membrane in order to react with the reagent. Further, because a reagent tape is used rather than the claimed reagent fluid, there is no injection of reagent and consequently the concentration of reagent cannot be practically adjusted in the borehole. It should also be noted that the reagent tape is stationary (the spectral window moves), whereas in the claimed invention the fluid reagent is not

stationary. The Examiner cites Clark as teaching use of a reagent with formation fluid. However, as described at column 2, line 56 through column 3, line 3, the alleged “reagent” is actually a fluorescent dye tracer. Clark neither uses the term “reagent” nor describes a chemical reaction of the dye with the formation fluid. A tracer is generally understood in the art as something that travels with, rather than chemically reacts with, formation fluid. Therefore, Clark fails to describe a reagent. Further, both Clark and Grey utilize a reflection measurement rather than an absorption measurement, and do not provide for multiple measurements without withdrawing the tool from the borehole. Based on the statement in the last sentence of section 1 of the Office Action at page 2, it appears that the Examiner may have interpreted claim 1 as not requiring analysis while the formation tester is downhole. Since claim 1 recites “transporting the formation tester downhole,” the Examiner must read-in an unwritten limitation that the formation tester is then moved out of the hole. Claim 1 has been amended to remove any lack of clarity on this point by reciting “while the formation tester remains downhole; moving ...; and performing spectral analysis on the reacted mixture.”¹ In sum, claim 1 distinguishes the cited combination by reciting mixing a reagent fluid with formation fluid and analyzing the reacted mixture in the borehole. Claims 2, 4, and 24 are dependent claims which further define the invention, and which are allowable for the same reasons as claim 1. Claim 34 was previously cancelled. Withdrawal of the rejections is therefore requested.

Claims 3 and 5-7 are rejected under 35 U.S.C. 103 as being unpatentable over Grey in view of Clark in view of Tawarayama. Tawarayama is cited as teaching detection of trace elements in a water flow using a syringe and spectrophotometer. However, there is no suggestion of either the problem or the claimed solution of the present invention, i.e., that a reagent fluid is mixed with a formation fluid, and analysis of the reacted mixture occur downhole before changing environmental conditions would alter the results. Claims 3 and 5-7 therefore distinguish the cited combination for the same reasons already stated above with regard to claim 1.

Claims 9, 15-17 and 20 are rejected under 35 U.S.C. 103 as being unpatentable over Grey in view of Clark and Tawarayama in view of Tubel. The Office cites Tubel as teaching use of chemical sensors downhole at col. 18, lines 19-20, but there is no suggestion in either the reference or the Office Action that the sensors would be spectral analyzers operative in

¹ Note that a “reacted mixture” does not necessarily imply that all reagent has reacted with formation fluid, but merely that some reaction has taken place. The rate and extent of reaction is a function of mixing efficiency and the composition of the reagent and formation fluid.

response to reagents. Claims 9, 15-17 and 20 therefore distinguish the cited combination for the same reasons already stated above with regard to claim 1.

Should there be any questions regarding the proposed amendments to the application, a telephone interview is respectfully requested to resolve such issues. Applicant believes no fee is due with this statement beyond that which has been authorized. However, if additional fees are due, please charge our Deposit Account No. **No. 19-0615**, from which the undersigned is authorized to draw.

Respectfully submitted,

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